South Saskatchewan River Basin
Water Management Plan

Phase One
Water Allocation Transfers

June 2002

Alberta Environment

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Additional background information is available in a separate document entitled *Appendices to the South Saskatchewan River Basin Water Management Plan, Phase One Water Allocation Transfers.*

The *Appendices* consist of:

A. Terms of reference for the *Phase One Plan*
B. Details of the public consultation process
C. Relationship of the *South Saskatchewan River Basin Water Management Plan* to other planning activities
D. Water management policy for the South Saskatchewan River Basin (1990)
E. South Saskatchewan River Basin water allocation regulation (1991)
F. Additional factors concerning transfers that may be considered for monitoring and evaluation

Additional copies of this document, or of the *Appendices,* may be obtained by contacting:

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Introduction

The *South Saskatchewan River Basin (SSRB) Water Management Plan* is designed to resolve several issues concerning water management in the basin, such as the availability of water for future allocations and river flows for the aquatic environment.

Phase one of the *SSRB Water Management Plan* establishes a system for water allocation transfers in the South Saskatchewan River Basin. Alberta Environment has outlined several recommendations with regard to establishing a system for water allocation transfers, each are addressed in phase one of the *SSRB Water Management Plan*.

The following is a summary of my department's recommendations as set out in the attached phase one of the *SSRB Water Management Plan*:

- Authorize a designated "Director" to consider applications for water allocation transfers and to use water conservation holdbacks
- Provide the Director guidance on matters to be considered when reviewing an application for a water allocation transfer
- Provide the Director information on water conservation holdbacks, and an interim closure of the Oldman River's southern tributaries to new allocations
- Commit Alberta Environment to a number of actions, including an additional phase of water management planning for the establishment of water conservation objectives

Water transfers, within the basin, will allow already allocated water to move to new demands and will allow for continued economic development, while improving the aquatic environment through water conservation holdbacks.

Lorne Taylor

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EXECUTIVE SUMMARY

The *South Saskatchewan River Basin (SSRB) Water Management Plan* is designed to resolve several issues concerning water management in the basin, such as the availability of water for future allocations and river flows for the aquatic environment.

The *SSRB Water Management Plan* is being prepared in phases. The first phase of the plan establishes a system for water allocation transfers, and recommends that no further applications for allocations in the St. Mary, Belly and Waterton Rivers be accepted. The second phase will focus on establishing water conservation objectives, which will determine the river flows for the aquatic environment. The focus of additional phases has not yet been confirmed.

Phase one of the *SSRB Water Management Plan* was developed by Alberta Environment in consultation with other government departments and four basin advisory committees in late 2001 and January 2002. Open houses on the draft plan were held for the general public. Appendix B outlines the results of the public consultation process.

Phase one of the *SSRB Water Management Plan*:

- Authorizes a designated "Director" to consider applications for water allocation transfers and to use water conservation holdbacks
- Provides the Director guidance on matters to be considered when reviewing an application for a water allocation transfer
- Provides the Director information on water conservation holdbacks, and an interim closure of the Oldman River's southern tributaries to new allocations
- Commits Alberta Environment to a number of actions, including an additional phase of water management planning for the establishment of water conservation objectives

Water allocation transfers in the SSRB

Water allocation transfers allow all or part of an existing water allocation to be transferred from an existing licence holder to another person or corporation for use in a new location permanently or for a fixed period of time. Along with the volume of the water allocation, the priority of the existing allocation is also transferred. This enables a new or existing water user to acquire an allocation with a level of risk acceptable to the user's requirements.

Water allocation transfers, within the basin, will allow already allocated water to move to new demands and will allow for continued economic development, while improving the aquatic environment through water conservation holdbacks.

The Director must consider the following factors when reviewing applications for transfers of water allocations under licences in the SSRB:

- Existing, potential and cumulative effects on:
  - the aquatic environment and any applicable instream objective and/or water conservation objective
  - hydraulics, hydrology, and hydrogeology
  - household users, traditional agriculture users and other higher and lower priority licensees
  - operations of reservoirs or other water infrastructure

- The suitability of land to be irrigated, if the proposed use is irrigation
- The historic volume, rate and timing of the diversion under the original licence
- The volume, rate and timing of the diversion under the proposed new licence
- Location of the existing diversion and the proposed new diversion
- Water quality
- Linkages between surface and ground water
- Current conditions on the licence from which water is to be transferred
- The *Master Agreement on Apportionment*

Water conservation holdbacks

During the public consultation process for the *Phase One Plan*, the public expressed concern that there may be insufficient flows in the rivers of the SSRB to protect the aquatic environment. To address that concern, this plan allows the Director to withhold up to 10 per cent of an allocation of water that is being transferred for protection of the aquatic environment or to implement a water conservation objective.

Interim closure of the Oldman River's southern tributaries to new allocations

There is evidence there is insufficient water in the Oldman River's southern tributaries (St. Mary, Belly and Waterton Rivers) to support additional allocations. Phase one of the *SSRB Water Management Plan* recommends the Director consider closing the Oldman River's southern tributaries to new allocations. It also recommends this be an interim measure until a policy concerning full allocation of basins is adopted with the approval of phase two of the *SSRB Water Management Plan*.

Additional commitments

- An annual report will be prepared by Alberta Environment concerning water allocation transfers.
- Alberta Environment will prepare a list of water allocation licences (in priority order) in the SSRB to assist parties interested in arranging water allocation transfers. This list will be made available to the public.
- This is the first phase of the multi-phase *SSRB Water Management Plan*. The next phase will focus on providing recommendations to the Director for the establishment of water conservation objectives, also a provision of the *Water Act*.

SOUTH SASKATCHEWAN RIVER BASIN WATER MANAGEMENT PLAN
Phase one—water allocation transfers

A. BACKGROUND

1. Introduction

The overarching purpose of the multi-phase *South Saskatchewan River Basin (SSRB) Water Management Plan* is to resolve water management issues such as the availability of water for future allocations and river flows needed for protection of the aquatic environment. This document represents the goal of phase one: to establish a system for water allocation transfers. The *SSRB Water Management Plan* will be a dynamic, living document that will evolve as additional phases are completed. The total number of phases to be eventually included in the plan is not yet known.

A water management plan can have a number of functions. It can:

- Authorize the Director (see definition on page 14) to use certain provisions of the *Water Act*
- Provide the Director guidance on factors that must be considered in making certain decisions
- Provide information to assist the Director is making certain decisions for which the Director has sole authority
- It can commit Alberta Environment (and other agencies) to certain actions

Phase one of the *SSRB Water Management Plan* is an *Approved Water Management Plan* as approved by the Lieutenant Governor in Council. It was prepared in accordance with *The Framework for Water Management Planning* (Alberta Environment, 2002a) and the *Water Act*.

For assistance in understanding terms used in this document, refer to the Definitions section on page 14.

2. Purpose of phase one of the *SSRB Water Management Plan*

Phase one of the *SSRB Water Management Plan* (hereafter referred to as the *Phase One Plan*) is primarily a plan for the implementation of the water allocation transfers provisions of the *Water Act*. The public was consulted in the development of the *Phase One Plan*.

Water allocation transfers are being authorized in order to improve the efficiency and effectiveness of water use, while

- Ensuring that existing water users and the aquatic environment are not adversely affected, and
- Returning water to the river for the benefit of the aquatic environment.

The *Phase One Plan*:

- Authorizes the Director to consider applications for water allocation transfers and to use water conservation holdbacks

- Provides direction to the Director on factors to be considered when reviewing an application for a water allocation transfer
- Provides information to the Director on water conservation holdbacks and the interim closure of the Oldman River's southern tributaries to new allocations
- Commits Alberta Environment to a number of actions, including an additional phase of water management planning for the establishment of water conservation objectives

3. The status of water availability in the SSRB

The issues addressed in this plan have arisen as the result of questions about the availability of water in the SSRB. Alberta Environment has investigated water availability in the SSRB by means of computer simulations (Alberta Environment, 2001). This investigation produced evidence that the demand for the water resource is rapidly reaching, or in some areas has exceeded, the water supply.

Water availability in general – the case for water allocation transfers

Red Deer Basin

- The existing instream objectives (the flows to remain in the river; see definition on page 14) have no scientific justification relative to protection of the aquatic environment.
- If the existing instream objectives (300 cfs, May to September, and 150 cfs, October to April) are used in modeling, existing licenses and commitments can be met, as can future expansion (e.g. SSRB Water Allocation Regulation-limited private irrigation, including the Special Areas Water Supply Project – see Appendix E).
- Until water conservation objectives (see definition on page 16) for the Red Deer River are established, the amount of water available for future consumption cannot be defined.

Bow River Basin

- Any new licences would have substantial numbers of years when the allocation would not be available. Any future developments that require significant volume will likely require storage.
- Water management modeling suggests that instream objectives will not be met all of the time.

Oldman Basin / South Saskatchewan Sub-basin

- For the entire basin (Oldman mainstem / South Saskatchewan sub-basin, southern tributaries and Willow Creek), irrigation demands at SSRB Water Allocation Regulation limits are a high proportion of the natural flow.
- The additional diversions needed to meet demands are provided from water stored in provincially-owned water management infrastructure after meeting instream objectives and apportionment.
- If new licences were issued they would be unlikely to have access to the allocation in drier years.

In general, water users with new or recent allocations (i.e. low priority or "junior" licences) in the basins of the Bow, Oldman and South Saskatchewan Rivers, have a high risk of not receiving their licenced allocation in drier years, as more senior licensees can divert the available water first. Strategies to provide more flexibility in the use of water in the SSRB are required and water allocation transfers are a tool for this purpose.

Water availability in the Oldman River's southern tributaries – The case for not accepting additional applications for allocations (interim measure)

The degree of allocation relative to supply has been investigated in greater detail for the southern tributaries of the Oldman River (the St. Mary, Belly and Waterton Rivers). Following are important points concerning water availability in these basins:

- Minimum flows for the southern tributaries were established with the approval of the South Saskatchewan Basin Water Allocation Regulation (Appendix E).
- Typically, the southern tributaries are operated at these minimum flows during much of the year. Even during the highest river discharge periods (June and July), the water withdrawals in most years result in the regulated flow being at, or close to, the minimum flows. During the high withdrawal demand periods, especially during the summer, the river flows are at the minimum almost all the time. This suggests that due to the water demands of the existing allocations, all the water that can be legally diverted is, and that there is little, if any, surplus water.
- St. Mary River - The total of licenced allocations (along with statutory household uses, registrations for farm use, and minimum river flow) is approximately 127 per cent of the estimated annual median basin runoff. This must be compared to the normal allocation level (used by Alberta Environment in the past) which is 70 per cent of the median annual flow. The existing storage in the basin helps to mitigate the imbalance.
- Belly River (including the Waterton River) – The total licenced allocations (along with statutory household uses, registrations for farm use, and minimum river flow) is approximately 88 per cent of the estimated annual median basin runoff. Water from this basin can be stored in the Waterton Reservoir and other reservoirs along the Waterton-St. Mary Headworks System and the internal reservoirs of the St. Mary River Irrigation District.

4. Water allocation transfers – general description

Water allocation transfers allow all or part of an existing water allocation to be transferred from an existing licence holder to another person or corporation for use in a new location permanently or for a fixed period of time. Prior to the authorization of transfers, water allocation licences were permanently attached to a particular parcel of land.

Along with the volume of the water allocation, the priority of the existing allocation is also transferred. This enables a new or existing water user to acquire an allocation with a level of risk acceptable to the water user.

Water allocation transfers are used in many jurisdictions, particularly in Australia and several western states in the USA.

Water allocation transfers can only be employed if authorized in an *Approved Water Management Plan* (section 81(7)(a)(i) of the *Water Act*), or by the Lieutenant Governor in Council.

In order for a transfer to proceed, an application for the transfer must be submitted to the Director. The Director decides if the transfer will or will not be allowed. If the transfer is allowed to proceed, then a new licence is issued for the transferred allocation. As with any new licence, the Director has the discretion to attach conditions. The conditions that are applied may vary depending on the needs of the sub-basin, river, or specific reach.

Only allocations of licences in good standing can be transferred (see definition on page 15).

Water allocation transfers apply only to licences issued by Alberta Environment pursuant to the *Water Act* or preceding legislation (e.g. *Water Resources Act*). Transfers do not apply to irrigation agreements between irrigation districts and farmers within the districts. The irrigation districts hold the licences to withdraw water from a river, not the individual farmers.

Transfers along the same river are more likely to be approved than transfers between sub-basins (that is, any level of sub-basin in the SSRB). The transfer of an allocation between sub-basins is expected to be problematic because the allocation could be senior to existing allocations in the sub-basin in which the new licence would be issued, and thus possibly have an adverse effect on them.

Under Alberta's *Water Act* one type of water use is not favoured over another in the issuance of licences. The same will apply to water allocation transfers.

The ability to transfer a water allocation provides an incentive for more efficient use of water, as water that is rendered surplus by improved efficiency could be transferred to other users.

5. Summary of the issues considered

The following questions pertaining to implementation of water allocation transfers were the focus of the preparation of *Phase One Plan*:

- What matters or factors must be considered by the Director when making a decision on an application to transfer an allocation under licence?
- Should there be water conservation holdbacks (see definition on page 16) from transferred allocations to protect the aquatic environment or to implement a water conservation objective?
- What information should Alberta Environment be tracking concerning water allocation transfers?
- Should Alberta Environment continue to issue licences for new water allocations in highly allocated basins, where new licences will not have an assured water supply?

Many other issues that became evident after this planning initiative started were identified and considered. Public input was invaluable in ensuring that issue identification was comprehensive and forward thinking.

Input that was outside the scope of this *Phase One Plan* was either recorded for consideration in future phases, or recorded and forwarded to the relevant officials for consideration and possible action in other planning, policy, or operations initiatives.

6. Planning area

The area affected by this plan is that part of the SSRB that lies within the province of Alberta. The SSRB includes the sub-basins of the Bow, Red Deer, Oldman and South Saskatchewan River basins (Fig. 1, page 6). The basins of Pakowki and Many Island Lake are not considered to be part of the South Saskatchewan River sub-basin in this plan, as they are separate, internal drainages that do not contribute flows to the SSRB.

This *Phase One Plan* applies to all projects that use water diverted within the SSRB.

7. Public consultation

For each of the four sub-basins within the SSRB, a Basin Advisory Committee (BAC) was formed with representatives of sectors with an interest in water management. The sectors represented on the BACs varied from sub-basin to sub-basin due to different water uses and needs. The interests typically represented on BACs included: municipal (both urban and rural), environmental/ecosystem protection, industry, non-irrigation agriculture, irrigation, First Nations, and recreation.

The BACs played an important role in the preparation of this *Phase One Plan*. Each BAC met a number of times, and all the BACs participated in two joint meetings in Calgary. For more information about the meetings see Appendix B. The BACs provided advice to Alberta Environment on water management in their respective sub-basins and on the topic of water allocation transfers, in particular.

A series of seven public open houses were held during January 2002. The primary topic for discussion was the transfer of water allocations within the SSRB.

The members of the BACs and people who attended the open houses had wide-ranging and productive discussions concerning transfers. Through those discussions and written comments, participants provided thoughtful ideas and advice on how issues related to transfers should be handled.

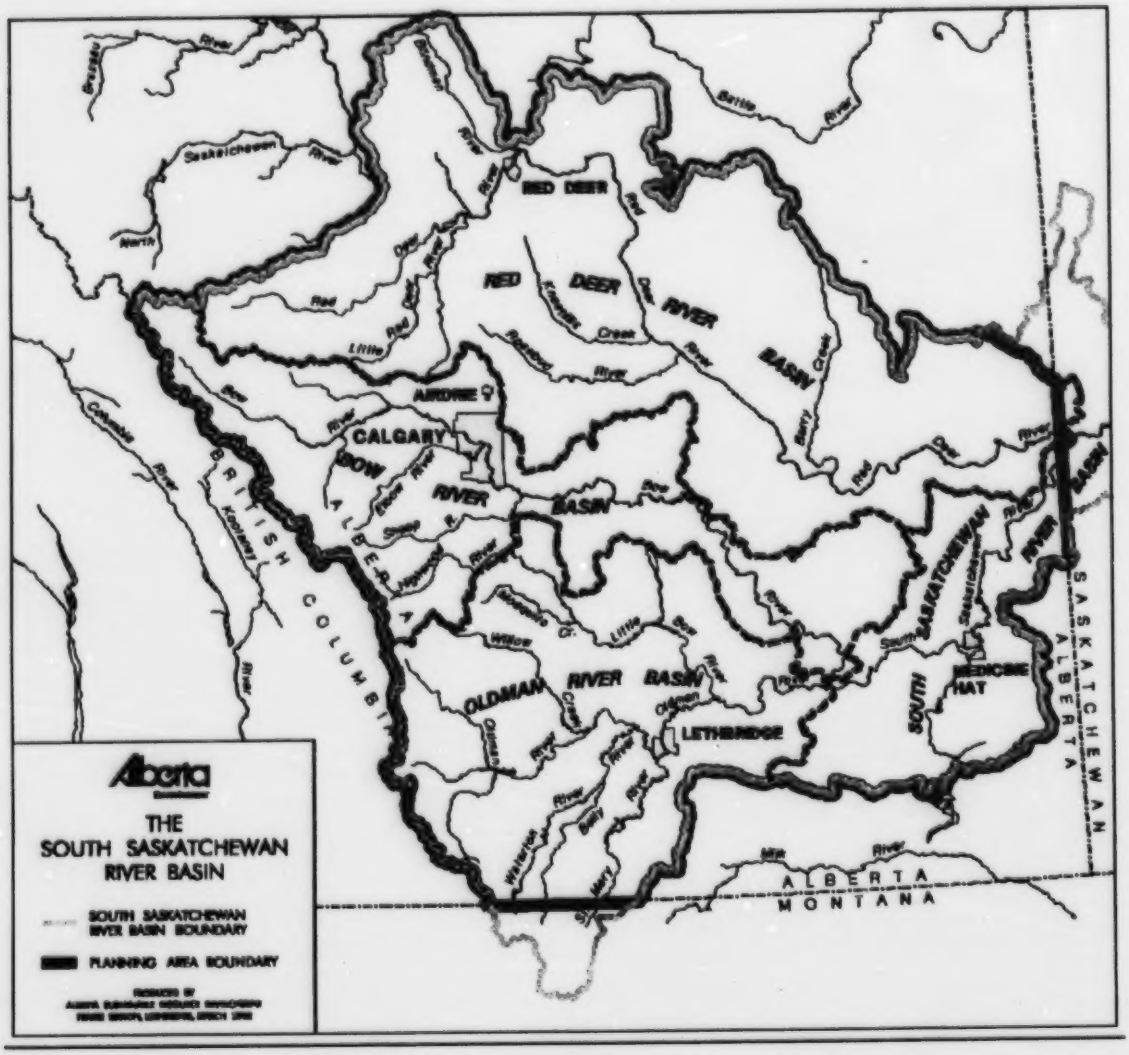

Figure 1 The South Saskatchewan River Basin

The parts of the basin that lie in Montana and Saskatchewan are not in the planning area. The water management plan applies to all projects that use water diverted within the SSRB.

The input received from the BACs and the general public was carefully considered by the *working group* and the *steering committee* (see definitions on page 16). The input was used to revise the draft plan. All input was compiled in two documents (Alberta Environment, 2002b and 2002c).

The BACs and the general public were not directly consulted on the subject of the water allocation situation in the St. Mary, Belly and Waterton Rivers, as a decision was made by Alberta Environment to include this matter in the plan after the public process had concluded for phase one.

However, the BACs were consulted on the question of whether or not Alberta Environment should issue licences for new allocations in highly allocated basins, even though the new licences would be unlikely to have access to water in drier years. A list of the points for which there was broad public support across the SSRB is provided in Appendix B.

8. Summary of information assembled

To complete the *Phase One Plan*, a wide variety of information was used:

- Background information on transfers: reports, articles, fact sheets, presentations, and other information on the issues related to transfers
- *Water Act* and related regulations
- *Water Allocation Transfers Workbook*: the workbook identified the key areas to be addressed for phase one (e.g. the matters or factors that must be considered, water conservation holdbacks) and tracking of transfers
- *Water Management Modeling Information Package*: information on the status of water supply and demand in the SSRB. This includes licenced withdrawals (e.g. for municipal use or irrigation), the existing instream objectives (e.g. water quality, fish habitat), and the apportionment agreements
- Advice of the BACs: meeting minutes and submissions of the BACs and information provided by individual BAC members
- General public input: comments received from people who attended public meetings or submitted written comments
- Response to questions: additional information provided in response to inquiries from the BACs
- Results of consultations undertaken while preparing the *Water Act*
- The status of water allocations versus the water supply and the flow regimes of the St. Mary, Belly and Waterton Rivers, along with other background information about these rivers

9. Relationship with *Water for Life: Alberta's Strategy for Sustainability*

Alberta Environment is leading the development of a comprehensive strategy that will identify short-, medium-, and long-term plans to effectively manage the quantity and quality of the province's water systems and supply. *Water for Life: Alberta's Strategy for Sustainability* will address Alberta's current water challenges and enable the province to proactively deal with water-related issues we may face in the future.

The goal is to have an action-oriented water strategy- one that identifies specific activities and initiatives – in place by late fall 2002. Further information about *Water for Life* is available at http://www.waterforlife.gov.ab.ca/.

The *SSRB Water Management Plan* is a regional initiative dealing with specific issues in the SSRB. As such, it will proceed in parallel with, but independent of, the work on *Water for Life*. In the long-term (i.e. once recommendations of the Strategy are implemented) there may be implications to the *SSRB Water Management Plan* that may require parts of the plan to be re-visited and amended, with public consultation. However, the importance of the water management issues in the SSRB is justification to continue without delay on a water management plan.

10. Relationship with regional strategies and other planning activities

Regional strategies are a new initiative of the Government of Alberta. They will provide direction for different regions of the province for natural resources and environmental management that falls under provincial authority. They are intended to lead Alberta toward a future that will sustain a healthy environment and a strong economy, and maintain community well being. In other words, they will serve to promote sustainable development. A pilot regional strategy is currently underway in the Northern East Slopes region of the province.

A Regional strategy is to be initiated for southern Alberta. The project area will cover the SSRB, the Milk River basin, the Pakowki Lake and Many Island Lake basins, the Cypress Hills, and the part of the grasslands natural region on the northeast fringe of the SSRB that is not included in the foregoing areas.

Approved regional strategies may identify issues that need to be addressed in future phases of water management planning, or identify issues that need to be addressed in existing water management plans. If necessary, the *SSRB Water Management Plan* can be amended in the future to accommodate direction given in approved regional strategies.

There are numerous other planning activities (by the provincial government and other bodies) in the SSRB that may have some relationship to the *SSRB Water Management Plan*. For a list of these, please refer to Appendix C.

The *Phase One Plan* will govern all water allocation transfer activity in the SSRB. Future water management plans developed in the SSRB must be consistent with this plan.

Two key documents are particularly relevant to the *SSRB Water Management Plan*:

- *Water Management Policy for the South Saskatchewan River Basin* (Appendix D)
  - Adopted in 1990. Provides general policies for the SSRB.
- *South Saskatchewan Basin Water Allocation Regulation* (Appendix E)
  - Enacted in 1991 by the Lieutenant Governor in Council, the regulation limits the amount of water (in terms of irrigated acres), which may be allocated to a particular project if an application is made. It does not allocate or commit water to any project.

B. AUTHORIZATIONS

The *Water Act* requires that certain of its provisions be authorized in an *Approved Water Management Plan*, or by order of the Lieutenant Governor in Council, before they can be utilized. This section provides the required authorization for the Director to consider applications for water allocation transfers and to utilize water conservation holdbacks.

1. Authorization of water allocation transfers

The Director (as designated under the *Water Act*) is hereby authorized to consider applications to transfer water allocations under licences in the SSRB in Alberta, subject to sections 81, 82 and 83 of the *Water Act*.

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Regional strategies are a new initiative of the Government of Alberta. They will provide direction for different regions of the province for natural resources and environmental management that falls under provincial authority. They are intended to lead Alberta toward a future that will sustain a healthy environment and a strong economy, and maintain community well being. In other words, they will serve to promote sustainable development. A pilot regional strategy is currently underway in the Northern East Slopes region of the province.

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1. Authorization of water allocation transfers

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2. Reviews of applications for water allocation transfers

The factors which must be considered by the Director with authority for sections 81, 82 and 83 of the *Water* Act, when reviewing applications for transfers of allocations of water under licences in the SSRB, are listed in Table 1 (page 10). Consideration of these matters will help to ensure that, if approved, transfers will improve the ability to manage water without unacceptable impacts on people or the aquatic environment. The factors listed are functions of the effects that may result from changes in the rate, volume and timing of water diversions resulting from transfers.

Criteria for approval of transfer of water allocation are also included in Table 1 (page 10). These provide the standards that are to be met in the consideration of the factors for which criteria are stated.

The *Water Act* (81(6)) requires that there be public review of proposed transfers. Also, the applicant for a transfer must provide notice and statements of concern can be submitted by directly affected parties.

Table 1. Factors that must be considered in reviewing an application for a transfer of an allocation of water under a licence in the SSRB

Factor	Criteria for approval
Existing, potential and cumulative effects on the aquatic environment and any applicable instream objective and/or water conservation objective	• No significant adverse effect on the aquatic environment resulting from the transfer • No significant adverse effect on existing instream objectives or water conservation objectives resulting from the transfer
Existing, potential and cumulative hydraulic, hydrological and hydrogeological effects	
Existing, potential and cumulative effects on household users, traditional agriculture users and other higher and lower priority licensees	• From the *Water Act*, Section 82(3)(b): *the transfer of the allocation, in the opinion of the Director, does not impair the exercise of rights of any household user, traditional agriculture user or other licensee other than household user, traditional agriculture user or other licensee who has agreed in writing that the transfer of the allocation may take place*
With respect to irrigation, the suitability of the land to which the allocation of water is to be transferred for irrigated agriculture	• The land must be suitable for irrigated agriculture: Class 4 or better in accordance with the standards of Alberta Agriculture, Food and Rural Development
The historic volume, rate and timing of the diversion under the original licence	
The volume, rate and timing of the diversion under the proposed new licence	
Location of the existing diversion and the proposed new diversion	
Water quality (including public health and safety and assimilative capacity)	• No significant adverse effect on public health and safety or assimilative capacity
The linkages between surface and ground water and the effects or changes in the overall system of water use	• No significant adverse effect on groundwater quantity or quality
Existing, potential and cumulative effects on the operations of reservoirs or other water infrastructure	• No significant adverse effects on operations unless operations can be satisfactorily adjusted to mitigate the effects
Current conditions on the licence from which water is to be transferred	• In the case of a transfer of part of an allocation, there will be no adjustments to the current conditions on the part of the allocation that is not being transferred, unless necessary to give effect to the transfer
Master Agreement on Apportionment (Alberta's commitments to Saskatchewan)	• The terms of the *Apportionment Agreement* will be respected
The *Water Act* (82)(5)(c)(iv) also provides that the Director *may consider any other matters applicable to the transfer of the allocation that the Director considers relevant.*	

3. Authorization of water conservation holdbacks

Section 83(1) of the *Water Act* reads as follows:

> *If the Director is of the opinion that withholding water is in the public interest to protect the aquatic environment or to implement a water conservation objective, and the ability to withhold water has been authorized in an applicable approved water management plan or order of the Lieutenant Governor in Council, the Director may withhold up to 10 per cent of an allocation of water under a licence that is being transferred.*

The Director is hereby authorized to withhold up to 10 per cent of an allocation of water under a licence that is being transferred, if the Director is of the opinion that withholding water is in the public interest to protect the aquatic environment or to implement a water conservation objective.

C. INFORMATION FOR THE DIRECTOR

The *Water Act* grants sole authority to the Director to make decisions on certain matters. Among them are water conservation holdbacks (section 83) and the ability to decide if applications for licenses for water allocations should not be accepted for a period of time in a geographical area (section 53).

1. Water conservation holdbacks

It is recommended that the Director withhold the maximum permitted by the *Water Act*, which is 10 per cent, due to the broad concerns expressed by the public that there may be insufficient flows remaining in the rivers of the SSRB to protect the aquatic environment, and particularly:

- If additional flows are needed to protect the aquatic environment or to meet an applicable instream objective or water conservation objective, downstream of the point of the new diversion, or in any downstream reach, including past the confluence with another river, to the Saskatchewan border, or
- In basins in which applications for new allocations for some or all uses are no longer being accepted (full or partial moratoria),

unless a smaller holdback is sufficient to protect the aquatic environment or to implement a water conservation objective.

If it is determined by the Director that, once a water conservation objective has been established, more water was withheld than required to meet the objective, then it is recommended that Director return the excess to the licence holders, in proportion to the original withholdings.

It is intended that withheld water will remain in the river with the priority of its original licence, by means of water conservation objective licences. The Government of Alberta will apply to the Director for such licences.

3. Authorization of water conservation holdbacks

Section 83(1) of the *Water Act* reads as follows:

> *If the Director is of the opinion that withholding water is in the public interest to protect the aquatic environment or to implement a water conservation objective, and the ability to withhold water has been authorized in an applicable approved water management plan or order of the Lieutenant Governor in Council, the Director may withhold up to 10 per cent of an allocation of water under a licence that is being transferred.*

The Director is hereby authorized to withhold up to 10 per cent of an allocation of water under a licence that is being transferred, if the Director is of the opinion that withholding water is in the public interest to protect the aquatic environment or to implement a water conservation objective.

C. INFORMATION FOR THE DIRECTOR

The *Water Act* grants sole authority to the Director to make decisions on certain matters. Among them are water conservation holdbacks (section 83) and the ability to decide if applications for licenses for water allocations should not be accepted for a period of time in a geographical area (section 53).

1. Water conservation holdbacks

It is recommended that the Director withhold the maximum permitted by the *Water Act*, which is 10 per cent, due to the broad concerns expressed by the public that there may be insufficient flows remaining in the rivers of the SSRB to protect the aquatic environment, and particularly:

- If additional flows are needed to protect the aquatic environment or to meet an applicable instream objective or water conservation objective, downstream of the point of the new diversion, or in any downstream reach, including past the confluence with another river, to the Saskatchewan border, or
- In basins in which applications for new allocations for some or all uses are no longer being accepted (full or partial moratoria),

unless a smaller holdback is sufficient to protect the aquatic environment or to implement a water conservation objective.

If it is determined by the Director that, once a water conservation objective has been established, more water was withheld than required to meet the objective, then it is recommended that Director return the excess to the licence holders, in proportion to the original withholdings.

It is intended that withheld water will remain in the river with the priority of its original licence, by means of water conservation objective licences. The Government of Alberta will apply to the Director for such licences.

2. Interim closure of the Oldman River's southern tributaries to new allocations

- The degree of water allocation in the southern tributaries of the Oldman River (the St. Mary, Belly and Waterton Rivers) is one of the most pressing issues in the SSRB. There is evidence that these rivers cannot support any additional allocations.
- The existing water management policy for the SSRB (Appendix D) states: *On regulated streams, projects will be managed such that the instream flows drop to minimum levels only for short periods of time under drought conditions.*
- As stated later in this plan, the existing water management policy will be reviewed during the preparation of phase two of the *SSRB Water Management Plan*. However, it remains in effect until it is suspended or superseded.
- Section 53(1) of the *Water Act* states:
  If the Director is of the opinion that no further allocation of water should be made in a water management area or other geographical area considered appropriate by the Director or from a water body, the Director may decide that applications for licences are not to be accepted by the Director for a specified period of time
- As stated later in this plan, during phase two of the *SSRB Water Management Plan*, a policy for the closure of basins to new allocations of water is to be developed.

It is recommended that the Director review the above information, any other information concerning the southern tributaries, conduct any required research and consider exercising the authority granted under section 53(1) of the *Water Act*. That is, to not accept additional applications for allocations as an interim measure until phase two of the *SSRB Water Management Plan* is complete and approved.

Once phase two is approved, the southern tributaries could be evaluated in light of the policy on closing basins to new allocations and a final decision made.

D. OTHER ITEMS

1. Performance monitoring: evaluation of water allocation transfers

Water allocation transfers are a new tool for water management in Alberta. In order to evaluate the success of the tool, some aspects of transfer activity will be monitored to create baseline knowledge which will be reported annually.

Aspects of transfers that will be tracked include:

- number, location and volume of temporary and permanent transfers
- volume and location of holdbacks
- term of temporary transfers
- number of temporary and permanent transfers without holdbacks
- number of upstream and downstream transfers
- changes in purpose and timing of diversions
- effects on apportionment and the contribution of sub-basins to meeting apportionment
- number of appeals, grounds, and outcomes
- reasons for not approving transfers
- prices for transferred allocations, if and when this information is in the public domain

There are also a number of more complex topics that could be studied. These are listed in Appendix F. Further studies will determine if and how these topics should be tracked and reported.

2. List of licences for water allocations

Alberta Environment will prepare a list of water allocation licences (in priority order) in the SSRB to assist parties interested in arranging water allocation transfers. This list will be made available to the public.

3. Future reviews, amendments, and future phases of the plan

Reviews and amendments of the plan and its term of effect

As scientific knowledge advances and water management methods improve, the *SSRB Water Management Plan* will be reviewed at intervals for it to remain current, relevant and useful.

The *SSRB Water Management Plan* is scheduled for reviews and possible amendments at 10-year intervals, with the first interval to start on the date the plan is amended to incorporate phase two. If necessary, a review of the plan can occur at any time.

Future Phases

It is expected that phase two will have the following objectives:

1) To review and update the existing water management policy for the SSRB

2) To develop a strategy for the protection of the aquatic environment in the SSRB. The strategy is anticipated to have three components:
   i) Development of water conservation objectives (river flow objectives) on a river reach basis for the low flow ranges required by the aquatic environment.
   ii) Recognizing the interconnectedness of environmental issues, develop a strategy, which may include water conservation objectives and other options such as operational releases, to optimize the benefits of infrequent high flow events for the aquatic environment.
   iii) Identify and prioritize the area and reaches of rivers or streams in the SSRB that would benefit from a riparian health assessment, and restoration of riparian conditions.

3) To determine the volume of water in the SSRB available for new water allocations

4) To determine the matters or factors that must be considered in deciding whether to issue an approval, preliminary certificate (see definition) or licence

5) To make required amendments to the phase one part of the *Approved Water Management Plan*.

Once complete, the subsequent phases and reviews of the *SSRB Water Management Plan* will be incorporated into the plan by amendment by the Lieutenant Governor in Council.

Local or small basin water issues may be resolved under the umbrella of the overall *SSRB Water Management Plan*. In some cases, preparation of water management plans under the *Water Act* for smaller basins may be appropriate. Public initiatives to resolve water issues will be encouraged.

E. DEFINITIONS

Some of the following terms were previously defined in the terms of reference for the *Phase One Plan*. The definitions for some of these terms may have been subsequently improved and changed.

Allocation – (As defined in the *Water Act*) The volume, rate and timing of a diversion of water.

Apportionable flow – The St. Mary River originates in the Rocky Mountains in northern Montana and flows east and north into Alberta and into the Oldman River. The sharing of the St. Mary River's waters is governed by the 1909 Boundary Waters Treaty between Canada and the United States. Under this agreement, during the April 1 to October 31 irrigation period, the U.S. is entitled to consume or divert up to 25 per cent of the natural flow of the St. Mary River for flow rates up to 666 cubic feet per second and 50 per cent of the flow above 666 cubic feet per second. During the non-irrigation period, the U.S. is entitled to consume or divert up to 50 per cent of the natural flow. The apportionable flow used to determine Alberta's and Saskatchewan's entitlements under the 1969 Master Agreement on Apportionment is the natural flow of the South Saskatchewan River less U.S. entitlements in the St. Mary River.

Aquatic environment – (As defined in the *Water Act)* The components of the earth related to, living in or located in or on water or the beds or shores of a water body, including but not limited to all organic and inorganic matter, and living organisms and their habitat, including fish habitat, and their interacting natural systems

Basin Advisory Committee – Each of the four sub-basins of the SSRB (Oldman, Bow, Red Deer and South Saskatchewan) has a Basin Advisory Committee (BAC). During phase one, the objective of the BACs was to provide advice to Alberta Environment on implementing transfers of allocations of water under a licence.

Membership of a BAC was designed to represent all sectors interested in water management in the sub-basin. Leaders in each sector were invited to select its own representatives(s) on the BAC.

Director – For purposes of administration of the *Water Act*, certain staff in Alberta Environment, such as Approvals Managers, are designated as "Director," as the term is used in the *Act*. Under the *Water Act* the Director has sole authority to make decisions concerning a number of specified subjects.

Instream need (IN) - This is the scientifically determined amount of water, flow rate or water level that is required in a river or other body of water to sustain a healthy aquatic environment or to meet human needs such as recreation, navigation, waste assimilation, or aesthetics. An instream need is not necessarily the same as the natural flow. Instream needs are sometimes also referred to as "instream flow needs", or IFN.

Instream objective (IO) - This term describes a desired level of flow or water quality that has been established in consideration of both instream and withdrawal (e.g. municipal, irrigation, industry) needs. Instream Objectives have usually been set in response to fish habitat instream needs (the Fish Rule Curve) and/or water quality.

Some licences and operating policies include Instream Objective conditions whereby water cannot be withdrawn if the actual river flow is at or below the IO. In some reaches in the SSRB (e.g. southern tributaries of the Oldman River, Bow River below the Bassano Dam), "minimum flows" are in place. These are managed as instream objectives. Instream Objectives can be formalized as a "water conservation objectives" and incorporated into new licences.

Licence in good standing – This term is used in Alberta's *Water Act*, but is not defined. One of the issues that must be determined by the Director is whether or not the allocation of water to be transferred is held "under a licence in good standing" (*Water Act*, s. 81(7)(c)).

The licence has to be in good standing at the time the Director considers the application (that is, it already exists in good standing or the licence holder brings the licence into good standing prior to the time when the Director considers the application to transfer.)

Examples of a licence not in "good standing":

- breach of the *Water Act*
- subject to an investigation under the *Water Act*
- subject to an enforcement tool or prosecution
- breach of terms and conditions of the licence
- non-compliance with the terms and conditions (e.g. did not build the diversion site within the specified period)

Master Agreement on Apportionment - Schedule A of the 1969 Master Agreement on Apportionment for the South Saskatchewan River between Alberta and Saskatchewan allows Alberta to "divert, store or consume" from the river system each year, a volume of water equal to one-half of the apportionable flow (see definition on page 14) of the South Saskatchewan River at the Alberta-Saskatchewan boundary. The remaining volume of flow must be allowed to pass downstream into Saskatchewan. The exception to this general rule is that Alberta is entitled to divert, store or consume a minimum of 2.1 million acre feet in any year. The effect of this exception is that during years when the volume of natural flow is less than 4.2 million acre feet (a rare occurrence), Alberta may pass less than one-half of the apportionable flow to Saskatchewan. If at any time during a year Alberta wants to divert, store or consume more than half the apportionable flow, a flow rate of 1,500 cubic feet per second (cfs) must be maintained at the Saskatchewan border, unless the natural flow is less than 3,000 cfs, in which case half the natural flow must be passed.

(There is no policy in Alberta as to the amount of water each sub-basin of the SSRB must contribute to the Saskatchewan apportionment.)

Natural flow – Natural flow is the flow in rivers that would have occurred in the absence of any man-made effects on or regulation of flow. For purposes of water management, natural flow is a calculated value based on the recorded flows of contributing rivers, a number of factors concerning the river reaches (e.g. evaporation, channel losses, etc.), and water diversions. This is also known as "re-constructed flows" and "naturalized flows".

River – Any flowing water body in a naturally formed valley or channel, including streams, creeks, rivers, etc.

Southern tributaries – This term refers to the St. Mary, Belly and Waterton Rivers, which are also referred to collectively as the southern tributaries of the Oldman River.

Water allocation transfer – A water allocation transfer occurs after the holder of an existing licence in good standing for the withdrawal of water agrees to provide all or part of the allocation to another person or organization following which an application is made to the Director and the transfer is approved by the Director. With a transfer, the allocation is separated from the original land and a new licence with the seniority of the transferred allocation is issued and attached to the new location. The Director can place conditions on the new licence created as a result of the transfer. Water allocation transfers can occur only if authorized under an *Approved Water Management Plan* or by the Lieutenant Governor in Council. See Sections 81,82 and 83 of the *Water Act*.

Water conservation holdback - From the *Water Act* (section 83(1)): *If the Director is of the opinion that withholding water is in the public interest to protect the aquatic environment or to implement a water conservation objective, and the ability to withhold water has been authorized in an applicable approved water management plan or order of the Lieutenant Governor in Council, the Director may withhold up to 10 per cent of an allocation of water under a licence that is being transferred.*

The withholding occurs at the time the new licence created for the transferred allocation is issued (section 82(2) of the *Water Act*). That is, at the location of the original diversion, the allocation ceases to be diverted, and at the location of the new diversion, the allocation that can be diverted is 90 per cent (or more) of the original allocation.

Water conservation objective (WCO) - From the *Water Act*: *"water conservation objective" means the amount and quality of water established by the Director under Part 2, based on information available to the Director, to be necessary for the*

(i) protection of a natural water body or its aquatic environment, or any part of them,
(ii) protection of tourism, recreational, transportation or waste assimilation uses of water, or
(iii) management of fish or wildlife,

and may include water necessary for the rate of flow of water or water level requirements.

A licence can be issued by the Director to the Government of Alberta for the purpose of implementing a water conservation objective.

(SSRB) Water Management Plan steering committee - This committee of senior Alberta government managers provides direction and ensures water management planning in the SSRB is proceeding in a consistent and coordinated fashion. The committee reviews and comments on drafts of the *SSRB Water Management Plan* and will guide it to final approval by Lieutenant Governor in Council.

(SSRB) Water Management Plan working group - The working group consists of Alberta government staff who support and coordinate the process, manage technical analyses including computer simulations, conduct public consultation and create drafts of the *SSRB Water Management Plan*, along with other planning products.

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South Saskatchewan River Basin
Water Management Plan

Phase One
Water Allocation Transfers
Appendices

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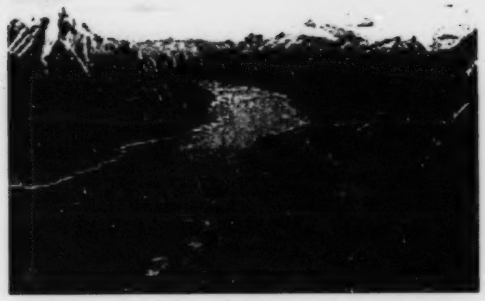
APPENDIX 'A'

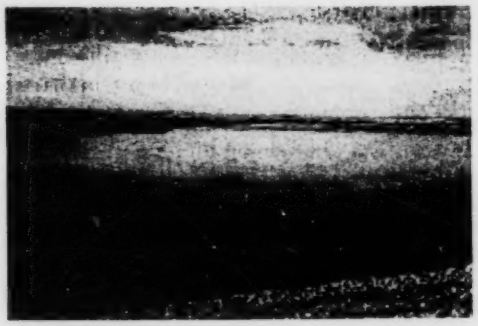
Terms Of Reference For The Phase One Plan

Terms of Reference

South Saskatchewan River Basin
Water Management Plan

First Phase





Alberta Environment
October 9, 2001

Introduction

These are the terms of reference for the first phase of a multi-phase water management planning process for the South Saskatchewan River Basin (SSRB). The first phase will become an Approved Water Management Plan ("the Plan") once the Provincial Cabinet approves it. This phase is scheduled for completion and approval by April 2002. The approved plan will be amended to incorporate future phases. Subsequent phases of the water management plan will have separate terms of reference.

The first phase has three main objectives:

- To develop a system to permit the transfer of water allocations[1]
- To compare river flows with instream needs[2] in order to identify:
  (1) needs for future planning, and;
  (2) stressed river reaches (see definition on last page) in which the aquatic environment would benefit immediately from increased flows (from possible water conservation holdbacks – see more complete definition of a water allocation transfer on the last page)
- To identify future phases for the Water Management Plan, and issues that should be addressed

a) <u>Water Allocation Transfers</u>

With limited water supplies and increasing demands in the SSRB, it is imperative that there be sufficient water to protect the aquatic environment and a means to make water available for a variety of purposes, thereby maximizing the benefits of the limited water resource.

One way this can be accomplished is by the use of water allocation transfers, a tool provided by the Water Act. Water allocation transfers allow all or part of an existing allocation to be transferred to a new location, person, or type of use. This can enable a new development to acquire an existing allocation or portion of an allocation (along with its seniority) subject to any consideration agreed to by the parties. This will influence people to use water more efficiently so that excess water can be made available for other uses. Conditions can be applied to transfers, for a number of reasons

b) <u>Instream Needs</u>

An additional purpose of the first phase is to compare scientifically determined instream needs of the aquatic environment of the SSRB with river flows under the current operating regimes. In reaches where river flows are usually less than instream needs, these reaches will be noted for attention during the second phase. These reaches may be identified as stressed and may be eligible to receive water from water conservation holdbacks at the earliest opportunity.

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[1] A water allocation transfer occurs when the holder of an existing license to withdraw water agrees to sell all or part of it to another person or organization. Water allocation transfers can occur only if authorized in an approved water management plan or by the Lieutenant Governor-In-Council. For more information, refer to the detailed definitions (last page).

[2] An instream need is a scientifically determined amount of water, flow rate, or water level that is required to sustain the aquatic environment in a healthy condition. An instream need can also be determined for river recreation or other purposes, such as aesthetics. An instream need is not necessarily the same as the natural flow.

c) **Future Phases**

The second phase will focus on the establishment of water conservation objectives[3]. It is to be completed by December 2002. This will include an assessment of the water volumes required for human uses (including existing commitments) and the river flows to protect the aquatic environment. The goal will be to reach compromises between these competing interests and make wise choices. One anticipated result of the second phase is that once all water conservation objectives are established the availability of water in the SSRB for consumptive use will be better understood.

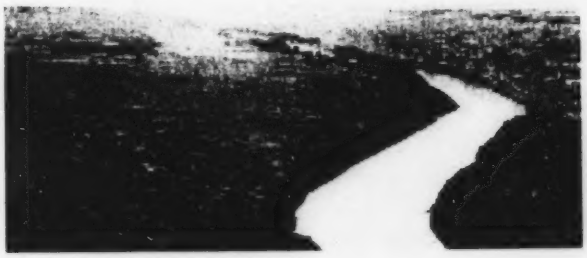
The results of the second (and subsequent) phase(s) will be incorporated into the Approved Water Management Plan. The additional phases of the Plan are yet to be determined. These could include water storage options, non-storage options (e.g. water conservation), and water quality issues. Public input will be sought on the subjects for future phases and specific issues to be addressed in those phases.

The Plan will be for the overall SSRB, but will also contain sections pertaining to the main sub-basins: the Red Deer, Bow, Oldman, and South Saskatchewan Rivers. There will be one plan to facilitate coordination and policy consistency between the four sub-basins, which are managed as a single unit, for purposes of meeting the Master Agreement on Apportionment (see definition). This is vital for the first and second phases, but may become less so once the planning focus shifts to resolution of more local water quality and allocation concerns. At that point it may be more appropriate to carry out local or sub-basin water management plans that would be under the umbrella of the overall SSRB plan, but not necessarily included in the document. Any issue with implications for other sub-basins must be addressed in the Plan.

The Plan will be a cooperative and integrated initiative of Alberta Environment (AENV), Alberta Sustainable Resource Development (ASRD), and Alberta Agriculture, Food and Rural Development (AAFRD). There will be a public consultation process.

Background

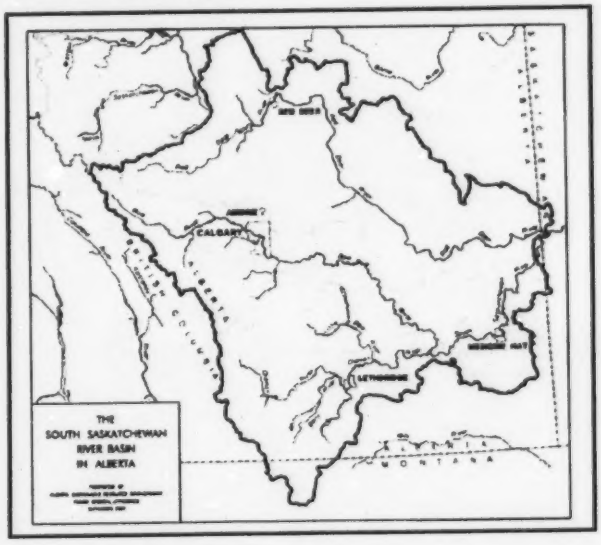
Alberta's Water Act contains provisions for the preparation of water management plans, to help ensure water is used wisely and that all interested parties have a clear understanding of the long-term goals for water management. The Act includes several requirements and options concerning the topics to be included in a water management plan.



[3] From the Water Act: "water conservation objective" means the amount and quality of water established by the Director under Part 2, based on information available to the Director, to be necessary for the
(i) protection of a natural water body or its aquatic environment, or any part of them,
(ii) protection of tourism, recreational, transportation or waste assimilation uses of water, or
(iii) management of fish or wildlife,
and may include water necessary for the rate of flow of water or water level requirements. For more information, refer to the detailed definitions.

Planning Area

The planning area is the rivers and streams in the South Saskatchewan River basin, which includes the sub-basins of the Red Deer, Bow, Oldman, and South Saskatchewan Rivers. The basins of Pakowki and Many Island Lakes are not considered to be part of the South Saskatchewan River sub-basin in this plan.



Issues To Be Addressed (In The First Phase)

The first phase of the SSRB water management plan will focus on three sets of issues:

a) Water Allocation Transfers
- Are there issues related to water allocation transfers in the South Saskatchewan River Basin that should be addressed before transfers are implemented?
- Are there issues that should be monitored as transfers are implemented?

b) Instream Needs
- Are there river reaches under sufficient stress to warrant immediate implementation of 10% (or less) water conservation holdbacks on water allocation transfers, before water conservation objectives are established (Second Phase)?

c) Future Phases
- The future phases of the Plan and specific issues to be addressed need to be determined.

Input will be accepted from the public on all matters concerning water management. Input on subjects that are outside the scope of the first phase will be noted for reference during future phases. Input on subjects that are outside the scope of the water management plan will be forwarded to the relevant officials for consideration and possible future action in other planning, policy, or operations initiatives.

Information Requirements

A number of reports and other materials are required for the First Phase SSRB water management planning process to proceed:

- Background papers containing information on the use of transfers in other jurisdictions.
- A description of the existing matters and factors that are presently considered in approving assignments of water, licenses, and other approvals under the Water Act
- A proposed process for the implementation of water allocation transfers in the South Saskatchewan River Basin.
- Information on water availability in the SSRB, under existing conditions and commitments.
- Scientific information on instream needs of the aquatic environment in the SSRB in terms of fish, riparian vegetation, water quality and channel structure. Instream needs will be presented as a single aggregated instream flow, combining the four components.
- A preliminary assessment of the status of river flows and instream needs for the protection of the aquatic environment in the SSRB.
- The existing study, South Saskatchewan River Basin Non-irrigation Water Use Forecasts, will provide an understanding of possible future water use patterns, also illustrating the limitations of the water resource in the SSRB.

Out-Of-Scope Topics

During the long-term evolution and development of the SSRB water management plan, all issues concerning the water resource will be addressed. Some issues may be local in scale, while others may be basin-wide.

The Meridian Dam Preliminary Feasibility Study is not part of the first phase. The purpose of the preliminary feasibility study is to determine if a proposed storage project should move into a more detailed feasibility investigation. Future results will determine if such a project will become part of subsequent water management plans.

The first phase of the Plan will not address the subject of the number of households permitted on a parcel of land. All other matters prescribed or authorized by the Water Act will be addressed in the first phase.

Constraints

The Water Act as it currently stands is a "given." However, suggestions about how the Act might be improved are always invited. The same applies to The Framework for Water Management Planning.

Policy Environment

The following documents guide water management planning in the SSRB:

- The *Water Act*
- The *Environmental Protection and Enhancement Act*
- Federal *Fisheries Act*
- *The Framework for Water Management Planning* (refer especially to the Water Management Principles)
- *Water Management Policy for the South Saskatchewan River Basin (1990.* (This policy may be revised as a result of water management planning, or even superceded by it.)
- *South Saskatchewan River Basin Water Allocation Regulation (1991)*
- *Master Agreement on Apportionment*
- *1909 Canada-U.S. Boundary Waters Treaty* and the *International Boundary Waters Treaty Act* concerning the St. Mary and Milk Rivers
- *Irrigation Districts Act*
- *Alberta's Commitment to Sustainable Resource and Environmental Management*
- *A Policy for Resource Management of the Eastern Slopes, Revised 1984*
- *Fish & Wildlife Policy for Alberta* – October 14, 1982
- *A Fish Conservation Strategy for Alberta – 2000-2005*
- The *Public Lands Act*

There are no other planning initiatives in the SSRB that will affect this planning process.

Planning Process

The fundamental process to be followed is that AENV staff will prepare background materials, planning options, and a draft plan, with advice from the public.

Government Staff Participants & Responsibilities

Steering Committee

The members of this committee will be: AENV Regional Directors within the SSRB; AENV Director of Environmental Operations; AENV Director of Innovations Division; ASRD Fish and Wildlife Management representative; AAFRD Head of the Irrigation Branch. This committee will have the following duties:

- be actively involved in the process to provide direction and to ensure the work in all four sub-basins is proceeding in a consistent, unified and coordinated fashion; and
- review and comment on drafts of the water management plan.

Regional Managers

The regional managers responsible for water allocations will be expected to work closely with the Steering Committee and the regional staff in all aspects of the development of the first phase water management plan.

Project Coordinator	A project coordinator will provide integration and coordination services. The project coordinator will be the Prairie Region Water Resource Planner. The coordinator will report to the Steering Committee.
Basin Coordinators	Basin coordinators will be identified in each region for purposes of this plan, and will provide leadership and coordination in each sub-basin. The regional community relations officers will assist the basin coordinators in all matters concerning public consultation. These staff will meet regularly for coordination purposes, along with key technical staff. This "Working Group" will also include representatives of the Irrigation Branch of AAFRD and AENV headquarters. The Working Group will be chaired by the Project Coordinator. Other staff (such as the instream needs scientists) may be requested to assist the group from time to time.
Instream Needs Group	Members of the Technical Instream Needs Group may be called upon to explain and interpret the results of the SSRB instream needs report.
Modeling Team	Water resources management modelers may be called upon to explain and interpret the results of the Water Resources Management Model. There may also be requests for additional modeling.

The work on this project will be the top priority for all the AENV staff who are listed above or called upon to provide assistance.

Public Consultation (During The First Phase)

a) The existing Basin Advisory Committees (BAC's) are the focal point for public consultation in this first phase. The role of the BAC's will be to provide advice to Alberta Environment on water management in their respective sub-basins. The BAC's are multi-sector stakeholder groups. Each BAC has a representative for all sectors interested in water management in the SSRB.

b) The BAC's will meet in one plenary session for an address from (a) senior Alberta Environment official(s) about the water management planning process. They will also receive presentations on water allocation transfers. All four BAC's will be provided with common background information and workbooks focussed on the key issues concerning water allocation transfers.

c) There will be a single round of open houses in each basin for the general public-at-large during the first phase. Open house locations will include Lethbridge, Medicine Hat, Calgary, Brooks, Red Deer, and Drumheller.

Reviews And Approvals (For The First Phase)

- The Steering Committee will review working drafts of the Plan as it develops and approve the final draft to be submitted for approval.
- The Steering Committee will be responsible for advancing the final draft for approval to the AENV executive.
- To be an Approved Water Management Plan the plan must be approved by the Lieutenant Governor in Council (the goal is for this to occur by April 2002).

Work Plan And Schedule (For The First Phase)

October 10, 2001	All the BAC's meet in a plenary session (in Calgary) to be addressed by senior officials of AENV on the work to be undertaken and the role of the BAC's.
Late October	BAC's receive information on the availability of water in the SSRB and background information on transfers and workbooks.
Early November	BAC's receive information on instream needs in the SSRB.
October/November	Staff and the BAC's review and discuss the background material, planning options, and complete the workbooks. The BAC's meet as required.
November/December	Staff, in all four sub-basins, collect and consolidate BAC advice and commence cooperative preparation of a draft plan, coordinated by the project coordinator. This stage of advice from the BAC's will conclude no later than Friday, December 7.
December	The draft plan is provided to the Steering Committee and the BAC's for comment. The draft plan is revised as required.
Early January 2002	The draft plan is taken to the general public-at-large for review in workshops in a number of locations in each region.
Late January	The draft plan is finalized after review of public input and submitted for approval.

Detailed Definitions

Instream Need (IN)
This is a scientifically determined amount of water, flow rate or water level that is required to sustain the aquatic environment in a healthy condition. Instream needs can also be determined for river recreation or other purposes, such as aesthetics. An instream need is not necessarily the same as the natural flow. At some times of the year (i.e. during high flows), for some components of the aquatic environment, the instream need can be less than the natural flow, while at other times of the year (i.e. during low flows) the instream need can be quite close to (if not the same as) the natural flow. In some circumstances, the instream need may be greater than the natural flow (e.g. when it is necessary to dilute waste).

At the present time, the aquatic environment is considered to be represented by: fish habitat, riparian vegetation (primarily the poplar forests on the flood plain), water quality (for fish), and channel structure. This latter term refers to stream erosion processes that serve to establish and maintain natural habitats.

Instream Objective (IO)
This term is presently in use to describe a desired flow level that has been established through public consultation, and is a target for water management. Given current knowledge and tools, IO 's have usually been set in response to fish habitat instream needs (the Fish Rule Curve). Many of the existing instream objectives are set at 80% of the Fish Rule Curve. IO's are included as a condition in more recent licenses (that is, water cannot be withdrawn if the actual river flow is at or below the IO). It is anticipated that the term "instream objective" will eventually be superceded by the term "water conservation objective."

Water Conservation Objective (WCO)
From the Water Act: a *"water conservation objective" means the amount and quality of water established by the Director under Part 2, based on information available to the Director, to be necessary for the*
1) protection of a natural water body or its aquatic environment, or any part of them,
2) protection of tourism, recreational, transportation or waste assimilation uses of water, or
3) management of fish or wildlife,
and may include water necessary for the rate of flow of water or water level requirements. This is an amount of water flow that is agreed upon through planning processes, during which the demands for consumptive use are compared with the instream needs and society then makes a choice about how much water should be in the river for the aquatic environment. In some cases, the water conservation objective could be the same as an instream need and/or the natural flow. In other cases, a water conservation objective can be selected that compromises between instream needs and consumptive demands. A water conservation objective can also be a target, and water could be obtained through transfers and water conservation holdbacks to eventually achieve and stay on this target.

Water Allocation Transfer
A water allocation transfer occurs when the holder of an existing license to withdraw water agrees to sell all or part of it to another person or organization. When this occurs the license is separated from the original land and a new license (but with the seniority of the transferred license) is issued attached to the new land where the water will be used. The Alberta Government can impose conditions on such transactions, including water conservation holdbacks, which can withhold up to 10% of the transferred water volume. The withheld water may be used by the Alberta Government for protection of the aquatic environment or to implement a water conservation objective. Water allocation transfers can occur only if authorized in an approved water management plan or by the Lieutenant Governor-In-Council.

Stressed River Reach
A stressed river reach is one in which typical river flows are usually less than the instream need.

Master Agreement on Apportionment
Schedule A of the 1969 Master Agreement on Apportionment for the South Saskatchewan River between Alberta and Saskatchewan, specifies that:

1) *annually, one half of the natural flow of the SSRB shall be passed to Saskatchewan. However if natural flow falls below 4.2 million acre-feet, Alberta can still keep more than half of the natural flow to a maximum quantity of 2.1 million acre-feet, provided that the instantaneous flow does not fall below 1,500 ft^3/sec (see clause below);*
2) *instantaneously, the combined flow of the South Saskatchewan and Red Deer rivers into Saskatchewan shall be not less than 1,500 cubic feet per second or half of the instantaneous natural flow, whichever is less.*

APPENDIX 'B'

Details Of The Public Consultation Process

Details of the Public Consultation Process

At the start of the process of developing the Phase 1 Plan, the BACs met in a plenary session in October 2001. At this meeting, presentations were provided by Alberta Environment staff about the water management planning process and water allocation transfers. All four BACs were provided common background information and workbooks focused on the key issues concerning water allocation transfers. The BACs then held a number of meetings and developed advice on the key issues and other topics (including some outside the scope of the project). This advice was considered during preparation of the draft of the Water Management Plan.

Once a draft plan was ready for review, the BACs met again in a plenary session in January 2002 to provide comments on this draft. A series of public open houses were subsequently held for additional public input on the draft plan.

The advice received from the BACs in October and November 2001 was compiled (Alberta Environment, 2002b). The advice received from the BACs and general public during January and February 2002 was compiled in a second document (Alberta Environment, 2002c).

The BACs and general public were not specifically consulted on the recommended interim closure of the southern tributaries of the Oldman River to applications for new allocations.

Summary of Meetings with Basin Advisory Committees (Dates and Locations):

Date	Location
Red Deer River BAC	
October 10, 2001	Calgary
November 01, 2001	Red Deer
November 23, 2001	Red Deer
November 30, 2001	Drumheller
January 22, 2002	Calgary
Bow River BAC	
October 10, 2001	Calgary
October 17, 2001	Calgary
November 07, 2001	Calgary
November 21, 2001	Calgary
January 22, 2002	Calgary
Oldman River BAC	
October 10, 2001	Calgary
October 25, 2001	Lethbridge
November 07-08, 2001	Lethbridge
November 29, 2001	Lethbridge
January 22, 2002	Calgary
South Saskatchewan River Sub-basin BAC	
October 10, 2001	Calgary
October 23, 2001	Medicine Hat
November 13, 2001	Medicine Hat
November 24, 2001	Medicine Hat
November 27, 2001	Medicine Hat
January 22, 2002	Calgary

Summary of Open House Sessions with the General Public (Dates and Locations):

Date	Red Deer River Basin	Bow River Basin	Oldman River Basin	South Sask. River Sub-basin
Monday January 14, 2002				Medicine Hat 35 attendees
Tuesday January 15, 2002	Red Deer 30 attendees	Calgary 55 attendees	Lethbridge 43 attendees	
Wednesday January 16, 2002	Drumheller 15 attendees	Brooks 34 attendees		
Thursday January 17, 2002	Bindloss 40 attendees			

Points for which there was broad public support across the SSRB

- There were many concerns regarding timelines and input opportunities in the planning process.
- There was general support for transfers with some reservations and concerns. It was considered a good tool but not without some downsides that must be managed.
- Impacts of transfers need careful monitoring. There was concern about long-term social and economic impacts of transfers.
- There was strong interest in water availability and water conservation objectives.
- There was much interest in the big picture and long-term water issues.
- Strong support was expressed for holdbacks to protect the aquatic environment.
- More information to educate/support newcomers to water planning who do not know the recent history of the new *Water Act* was requested.

APPENDIX 'C'

Relationship Of The SSRB Water Management Plan

To Other Planning Activities

Relationship of the SSRB Water Management Plan to other Planning Activities

Listed below are existing plans and current planning initiatives in the SSRB that are either directly or indirectly related to water management in the SSRB.

Numerous other conservation and landscape management initiatives are not listed but have the general effect of protecting the watershed.

Provincial Level

- *Water for Life: Alberta's Strategy for Sustainability* (in progress)
  - Alberta Environment.
  - A broad initiative to develop a provincial strategy for water management
  - Outcomes of this initiative may have implications for water management planning in the SSRB
  - See more complete description in section 9 of the main body of the Phase 1 Water Management Plan for the SSRB

South Saskatchewan River Basin

- Southern Alberta Regional Strategy
  - Soon to be initiated
  - See more complete description in section 10 of the main body of the Phase 1 Water Management Plan for the SSRB

- Integrated Resource Plans and Regionally Integrated Decisions
  - Alberta Sustainable Resource Development
  - Several are either in place or under development
  - Generally have the protection of watersheds as one objective (e.g. *A Policy for Resource Management of the Eastern Slopes)*

- Municipal development plans
  - Various urban and rural municipalities
  - Many are either in place or under development
  - Generally have the purpose of guiding development to reduce negative impacts on the environment, including water resources

- Management Plans for parks and protected areas (national and provincial)
  - Parks Canada, Alberta Community Development
  - Many are either in place or under discussion
  - Rocky Mountain headwaters have been focus of protection, but streams throughout the basin are protected
  - Have the inherent effect of watershed protection
  - Several new parks and protected areas were recently created through the Special Places Initiative

- Local watershed initiatives in smaller basins to improve water quality (under development), e.g. Little Red Deer River Watershed Initiative, Crowfoot Creek, Elbow River Watershed Partnership, Mosquito Creek/Little Bow Watershed Group, Nose Creek Watershed Partnership, Oldman River Basin Water Quality Initiative

Bow River Basin

- Bow Basin Plan
  - Alberta Environment
  - Preparation of a plan for the Bow Basin is underway. The plan will provide a water management strategy of the Bow River Basin. It will provide better information, improved analytical tools, and timely recommendations for decisions related to the water in the Bow River Basin. Phase 2 of the Water Management Plan for the SSRB will provide instream objectives for the Bow River downstream of Bearspaw Dam. Among the other initiatives contributing to the Bow Basin Plan are the Highwood Management Plan, the implementation of instream objectives for the upper Elbow River, and the work of the Fisheries and Recreation Enhancement Working Group.

- In the Bow River Basin, the Bow River Basin Council plays an important role in addressing water management issues. The Council reports to the Minister of Environment. The BAC in the Bow River Basin is a sub-committee of the existing Bow River Basin Council. The mandate of the Council is to: *Conduct activities for the purposes of protecting and improving the waters of the Bow River Basin and with respect to any social, cultural, economic and environmental aspects of:*
  - *The quality and quantity of groundwater and surface water*
  - *Riparian zones*
  - *Aquatic ecosystems*
  - *The effects of human activity and land use on surface water and groundwater quality and quantity*

- Highwood Water Management Plan (under development)
  - Alberta Environment, Alberta Transportation
  - Connected to the Highwood/Little Bow River diversion project
  - Mandated by the Joint Review Panel of the Natural Resources Conservation Board and the Canadian Environmental Assessment Agency
  - Goal is to achieve sustainable water management in the basins of the Highwood and Little Bow Rivers
  - The outcomes of this process will directly relate to SSRB water management
  - This process has served as a prototype for a number of scientific studies that are being applied to the SSRB

Red Deer River Basin

- Red Deer River Corridor Integrated Management Plan (in place)
  - Alberta Environment, Alberta Sustainable Resource Development, Alberta Community Development, municipalities
  - Contains references to water management, river recreation, fisheries
  - Must be consulted during Phase 2 of the Water Management Plan

- Glennifer Lake Reservoir Shorelands Areas Structure Plan (in place)
  - Alberta Environment, Alberta Community Development, municipalities
  - Contains policies for reservoir levels for recreation and water management for the Red Deer River downstream of the Reservoir

- Feasibility of the Special Areas Water Supply Project is currently being studied. A diversion of Red Deer River water in the vicinity of Nevis is proposed for use in the Special Areas.
  - Alberta Municipal Affairs (Special Areas)

Oldman River Basin

- Oldman River Basin Water Quality Initiative
  - Multiple partners
  - Purpose is to improve water quality
- C5 Forest Management Operational Land Use Management Plan (under development)
  - Alberta Sustainable Resource Development
  - May have incidental benefit of reducing impacts on the watershed from forest harvesting
- Castle River Access Management Plan
  - Alberta Sustainable Resource Development
  - May have incidental benefit of reducing impacts on the watershed from erosion caused by off-road vehicle use

South Saskatchewan River Sub-basin

- No initiatives

APPENDIX 'D'

Water Management Policy For The

South Saskatchewan River Basin (1990)

Water Management Policy for the South Saskatchewan River Basin
(Adopted in 1990)

The South Saskatchewan River Basin (SSRB) includes the Red Deer, Bow, Oldman and South Saskatchewan rivers. Alberta Environment's South Saskatchewan River Basin Planning Program provided information to assist the government in making policy decisions for the SSRB. In 1986, the Alberta Water Resources Commission (AWRC) completed a report outlining recommendations on water management, based on public hearings held throughout the SSRB. The following Water Management Policy is based on the planning program, public input and the recommendations of the AWRC.

The Water Management Policy will guide the management of the surface water resources throughout the SSRB. The Water Resources Act will be amended to facilitate full implementation of this Policy and the Irrigation Expansion Guidelines for the SSRB.

1. **Multi-Purpose Use**
   Multiple use will continue to be the principle governing the use and management of the waters in the SSRB.

   Multi-purpose use is the underlying principle governing the use and management of all water in Alberta. This policy reconfirms the government's objective to manage the resource to meet the requirements for diverse needs. These include domestic, municipal, agricultural, industrial, fisheries, wildlife, recreation and aesthetic requirements.

2. **Priority Of Uses, Minimum Flows And Preferred Instream Flows**
   The ownership of all surface water and ground water is vested in the Province. "Minimum" flows will be established on an individual river reach basis and these flows will be maintained to protect basic water quality and instream needs. Individual rights to divert and use water are granted in the form of licences, in accordance with legislation. These rights and their priority, as established by the date of application, will be respected. "Preferred" instream flows will be established on an individual river reach basis to protect desirable instream needs. The Province will reserve water when a predetermined level of allocation to licenced users and to instream flow requirements has been reached. A system of preferential use will be used to determine further allocations of water.

   As the water in our province belongs to the people of Alberta, the government is responsible for the wise allocation of this resource. Consideration must be given to individuals who withdraw water for their use and the need to retain water in the river for instream needs, including recreation, fisheries, wildlife and maintaining adequate water quality to sustain the ecology of our streams.

   Two levels of instream flow requirements will be defined: "minimum" to protect basic water quality and instream flow needs; and "preferred" to protect desirable instream flow needs. Regulated streams will be managed to meet preferred instream flows most of the time. During low runoff periods, it is recognized that water shortages will occur and instream flows will occasionally drop below the preferred level. On regulated streams, projects will be managed such that the instream flows drop to minimum levels only for short periods of time under drought conditions.

3. **Irrigation**
Maximum water allocation for irrigation purposes in the Red Deer, Bow and Oldman basins will be established with consideration to requirements for all other uses.

Irrigation agriculture is the largest consumptive user of water in Alberta. There is a need to establish guidelines for limiting irrigation expansion in the SSRB, based on the water supplies available.

Irrigation expansion will take place throughout the SSRB, including areas served by Irrigation Districts. Ongoing work on instream flow needs will assist in refining the guidelines for limiting irrigation expansion within individual Irrigation Districts and in other areas. These guidelines for limiting irrigation expansion will be reviewed in the year 2000.

4. **Apportionment Commitments**
Alberta will continue to manage the waters of the Red Deer, Bow, Oldman and South Saskatchewan Rivers in concert, with due regard to the needs and potential of each sub-basin, to ensure that the province's interprovincial commitments under the Master Agreement on Apportionment are met and to best serve the needs of all water users in the basin.

Alberta is committed to comply with the interprovincial Master Agreement on Apportionment which, in general, requires Alberta to pass 50 percent of the flow of eastern flowing rivers to Saskatchewan. The SSRB is spread over a wide geographical area and subject to varying climatic conditions. Coordinated management of the Red Deer, Bow, Oldman and South Saskatchewan Rivers, with due regard to the needs and potential of each sub-basin, provides the best option to meet both the needs of Albertans and the interprovincial commitments.

5. **Water Conservation**
The true value of water must be recognized to ensure that it is put to its most beneficial use and is not wasted. To achieve this goal, objectives and guidelines for conservation and efficiency will be developed.

The province is committed "to achieve the protection, improvement and wise use of our Environment, now and in the future." The wise use of our water resources must be based on recognition of the value of the resource. Compliance with guidelines for conservation and efficiency will be required. Improvements in efficiency and conservation measures beyond those required by the guidelines will be encouraged.

6. **Public Consultation**
Public consultation has been an accepted policy in water management in Alberta. The government will continue to be committed to full public consultation throughout the implementation of this water management policy. The management of water resources affects all Albertans. The government is committed to ensuring that Albertans have every opportunity to understand and provide advice on water management decisions.

APPENDIX 'E'

South Saskatchewan Basin

Water Allocation Regulation

South Saskatchewan Basin Water Allocation Regulation

(Enacted in 1991)

APPENDIX

Water Resources Act

South Saskatchewan Basin Water Allocation Regulation

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Schedule

Definitions

1. In this Regulation,

   (a) "existing" means in existence on January 1, 1990;

   (b) "licence" includes an interim licence;

   (c) "South Saskatchewan River Basin" means the land drained by the South Saskatchewan River and its tributaries, including the Red Deer River, the Bow River, the Oldman River and their tributaries;

   (d) "South Saskatchewan River Sub-basin" means the land drained by the reach of the South Saskatchewan River between the confluence of the Bow and Oldman Rivers and the Alberta-Saskatchewan boundary.

Reservation

2. All water in the South Saskatchewan River Basin that is not the subject of an existing licence or other authorization is reserved pursuant to section 12 of the Water Resources Act.

Authority to allocate reserved water

3. Water reserved under section 2 may be allocated in accordance with this Regulation.

Existing irrigation districts

4. (1) The total amount of water allocated for irrigation purposes from the river basins listed below to each named irrigation district under

(a) licences issued in accordance with this Regulation, and

(b) existing licences or other authorizations

must not exceed the amount sufficient for the irrigation of the total area of land specified for the irrigation district:

River Basin	Total Area of Land
Bow River Basin	
Western Irrigation District	95 000 acres
Bow River Irrigation District	210 000 acres
Eastern Irrigation District	275 000 acres
Oldman River Basin	
St. Mary River Irrigation District	372 000 acres
Magrath Irrigation District	18 300 acres
Raymond Irrigation District	48 500 acres
Taber Irrigation District	82 200 acres
Lethbridge Northern Irrigation District	167 000 acres
United Irrigation District	34 000 acres
Mountain View Irrigation District	3 700 acres
Leavitt Irrigation District	4 770 acres
Aetna Irrigation District	3 530 acres
South Saskatchewan River Sub-basin	
Ross Creek Irrigation District	1 200 acres

(2) The total amount of water, in acre-feet, that is sufficient for the irrigation of the area given in subsection (1) for an irrigation district shall be determined by the Controller of Water Resources in accordance with the following criteria:
(a) water required at the farms;
(b) canal losses within the district;
(c) evaporation for district reservoirs;
(d) water flows returning to rivers.

(3) A determination under subsection (2) fixes the maximum volume of water that an irrigation district may divert and use under licence, but nothing in this section limits the number of acres in an irrigation district that may be irrigated with that water through improved efficiencies of water management and operation within the district.

Other Irrigation

5. (1) The total amount of water allocated for irrigation purposes from the Red Deer River Basin under
(a) licences issued in accordance with this Regulation, and
(b) existing licences
must not exceed an amount sufficient for the irrigation of 97 000 acres and, of the amount made available for allocation by this Regulation, an amount sufficient for the irrigation of 25 000 acres shall be available only for the Special Areas Water Supply Project.

(2) The total amount of water allocated for irrigation purposes from the Bow River to land other than land in existing irrigation districts under
(a) licences issued in accordance with this Regulation, and
(b) existing licences
must not exceed an amount sufficient for the irrigation of 95 000 acres and, of the amount made available for allocation by this Regulation, amount sufficient for the irrigation of the following areas shall be available only for the named projects:

15 000 acres	Blackfoot Indian Reserve Projects
20 000 acres	Little Bow / Clear Lake Project
10 000 acres	Keho/Barons Project (North)

(3) The total amount of water allocated for irrigation purposes from the Oldman River Basin to land other than land in existing irrigation districts under
(a) licences issued in accordance with this Regulation, and
(b) existing licences
must not exceed an amount sufficient for the irrigation of 152 000 acres and, of the amount made available for allocation by this Regulation, amounts sufficient for the irrigation of the following areas shall be available only for the named projects:

25 000 acres	Blood Indian Reserve Project
15 000 acres	Peigan Indian Reserve Projects1
10 000 acres	Keho/Barons Project (South)
6 000 acres	Western Oldman Area Projects
15 000 acres	Oldman River Reservoir Area Projects
13 000 acres	Willow Creek Projects

(4) The total amount of water allocated for irrigation purposes from the South Saskatchewan River Sub-basin to land other than land in existing irrigation districts under
(a) licences issued in accordance with this Regulation, and
(b) existing licences
must not exceed an amount sufficient for the irrigation of 52 000 acres.

(5) The projects referred to in this section are the projects described in the Schedule.

Other purposes

6. Water may be allocated for
   (a) domestic purposes,
   (b) municipal purposes,
   (c) agricultural purposes, other than irrigation,
   (d) industrial purposes,
   (e) water power purposes,
   (f) other like purposes, and
   (g) purposes specified in section 11(1)(b) and (d) of the *Water Resources Act*.

Instream flows

7. (1) Any licences issued in accordance with this Regulation may contain conditions limiting the amount of water that may be diverted and used when necessary to maintain minimum instream flows.

   (2) The minimum instream flow for each of the following rivers is:

Waterton River	80 cubic feet per second measured above its confluence with the Belly River;
Belly River	33 cubic feet per second measured above its confluence with the Waterton River and above its confluence with the Oldman River;
St. Mary River	97 cubic feet per second measured above its confluence with the Oldman River.

Application of Regulation

8. This Regulation applies to existing applications and subsequent applications.

Prior Reservations Cancelled

9. Orders in Council numbered O.C. 1038/33 and O.C. 546/49 are rescinded.

SCHEDULE

1. "Special Areas Water Supply Project" means diversions from all or any of
   (a) the proposed Nevis diversion pipeline and canal from the Red Deer River,
   (b) Berry Creek upstream of Carolside Reservoir,
   (c) Sounding Creek upstream of Highway 12,
   (d) Blood Indian Creek, East Berry Creek, Monitor Creek, Nestor Creek and Spondin Creek,
   (e) Craig Lake and its inlet and outlet channels,
   (f) Contracosta Lake and its inlet and outlet channels, and
   (g) reservoirs and lakes supplied by the above mentioned creeks including Bloor Lake, Oldman Lake, Antelope Lake, Sounding Creek Reservoir, Grassy Island Lake, McBride Reservoir, Bartman Reservoir, Cessford Reservoir, Blood Indian Reservoir and the proposed Oyen and Monitor Reservoirs.

   for irrigation of land within the Special Areas.

2. "Blackfoot Indian Reserve Projects" means diversions from the Bow River or Carseland-Bow River Headworks System, or both, for irrigation of land within the Blackfoot Indian Reserve.

3. "Little Bow/Clear Lake Project" means diversions from all or any of
   (a) the Little Bow River between the proposed Little Bow River Reservoir and Travers Reservoir,
   (b) the proposed Little Bow Reservoir, and
   (c) Clear Lake

   for irrigation of land within the County of Vulcan and the Municipal District of Willow Creek.

4. "Keho/Barons Project" means diversions from all or any of
   (a) the Little Bow River between the proposed Little Bow River Reservoir and Travers Reservoir,
   (b) the Oldman River at a point on the Peigan Indian Reserve (N1/2 21-08-27-W4),
   (c) the Lethbridge Northern Headworks System, and
   (d) the Lethbridge Northern Irrigation District,

   for irrigation of land in the vicinity of the Villages of Carmangay and Barons.

5. "Blood Indian Reserve Project" means diversions from all or any of
   (a) the Belly River,
   (b) the St. Mary River, and
   (c) the Waterton-St. Mary Headworks System for irrigation of land within the Blood Indian Reserve.

   for irrigation of land within the Blood Indian Reserve.

6. "Peigan Indian Reserve Projects" means diversions from the Oldman River for irrigation of land within the Peigan Indian Reserve.

7. "Western Oldman Area Projects" means diversions from the Oldman River between the eastern boundary of the Peigan Indian Reserve and the confluence with the Belly River for irrigation of land within the County of Lethbridge and the Municipal District of Willow Creek.

8. "Oldman River Reservoir Area Projects" means diversions from all or any of
   (a) the Oldman River Reservoir,
   (b) the Oldman River upstream of the western boundary of the Peigan Indian Reserve, and
   (c) the Castle and Crowsnest Rivers
   for irrigation of land within the Municipal District of Pincher Creek, the Municipality of Crowsnest Pass and Improvement District 6.

9 "Willow Creek Projects" means diversions from the proposed Pine Coulee Reservoir or Willow Creek downstream of the outlet from the proposed Pine Coulee Reservoir, or both, for irrigation of land within the Municipal District of Willow Creek.

APPENDIX 'F'

Additional Factors Concerning Transfers

That May Be Considered For

Monitoring And Evaluation

Additional Factors Concerning Transfers that may be Considered for Monitoring and Evaluation

- Changes in water use and consumption resulting from transfers
- Changes in the health of the aquatic environment resulting from transfers
- Water valuations (without violating privacy)
- Ownership (monopoly concerns)
- Effects of transfers on groundwater users
- Economic and social impacts of transfers
- Efficiency of water use
- Needs for monitoring, enforcement and education concerning water use
- Effects on land uses: the type and acreage of land used for irrigation